**IT Applications Unit 3, AOS 2, Organisations and Data Management**

**Structure and role of relational databases, p 101**

**Describe the following relationships in a relational database.**

1. One-to-one relationship

A one to one relationship refers to when only one record from one table is connected to one record in another table. For example a airlines passenger details table, one seat to one customer.

1. One-to-many relationship

A one to many relationship indicates that one record in the first table can be connected to more than one record in a second table. For example several workers in a office may share a single telephone extension.

1. Many-to-many relationship

A many to many relationship is used when each record in the first table can be connected to a number of records in the second table or vis versa. For example each student studies many subjects while a subject is studied by many students.

**Determining a RDBMS structure**

Need to determine which field in each database will be the primary key

(the role of a primary key is to become a unique identifier for each record in the database. For example if we had a table called employees that contain personnel information for each employee in the firm. It must be considered for this example that a name may be unique however it cant be relied on therefor something like a employee ID number may instead be used.)

1. What are the roles of foreign keys?

The key role of foreign key is to create relationships between tables to assist in the prevention of redundant data being produced. For example linking a staff table to the department that they work in.

**Read the document, Primary keys/ Foreign keys**

1. describe the characteristics of a foreign key

.a foreign key can be characterised by the link to another table

(help on the answer please)

1. What is meant by referential integrity?

Referential integrity refers to the concept that ensures that relationships between tables remain consistant. For example preventing a foreign key being used when it is linking to an empty field. Likewise the deletion of a record linked to tables creates the deletion of all corresponding records in another table that were linked.

**Table normalisation**

1. What is the role of table normalisation?

The primary role of table normalisation is to eliminate redundant data (like multiple tables having same data) and to ensure that data is logically stored (like only related data in a table) enabling for efficient data organisation.

There are six “normal forms”, each rule applied successively from the first normal form, (1NF).

1. Describe the nature of the following three “normal forms”.
   1. First normal form, (1NF)

The first normal form sets the basic rules for a organised database by eliminating duplicate columns and limiting one value per field also the creation of separate tables for each group of related data and indentify each row with a unique column or set of columns.

* 1. Second normal form, (2NF)

Second normal form states that each non key field must be **fully** dependant to a key.

* 1. Third normal form, (3NF)

To meet the requirements of 3rd normal form, it must fit all prior and remove columns not dependent on primary key.

**Read the article, normalisation for more explanation of this process.**